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- Filtration.** See Water-supply.
- Firedamp.** See Mining.
- Fire Jets.**—"Characteristics of Fire Jets," J. S. Blair, **16**, 354 (June); *Correspondence*, 597 (Oct.).
- Fires.** See Buildings; Detectors; Factories; Mining; Power Stations.
- Flour Mills.** See Buildings.
- FOUNDATIONS.**—"Foundations for Basement Buildings adjoining Existing Property," S. K. Jordan, **15**, 119 (Dec.); *Correspondence*, **16**, 449 (Oct.).
 "Deepening Bridge Foundations by Means of H-Section Steel Bearing Piles," **15**, 77 (Nov.); "Foundation Exploration at Kentucky Dam", A. V. Lynn and

- R. F. Rhoades, **15**, 147 (Dec.); "A Consideration of Pile Driving with Application of Pile Loading Formula," R. D. Chellis, **16**, 405 (June).
 — See also Buildings; Samplers.
- FRAMED STRUCTURES.—"The Graphical Solution of Portal Frames," J. W. H. King, **15**, 85 (Dec.); *Correspondence*, **16**, 431 (Oct.).
 "An Investigation of Steel Rigid Frames," Inge Lyse and W. S. Black, **15**, 228 (Jan.); "Moment Distribution and the Analysis of a Continuous Truss of Varying Depth," E. R. Jacobsen, **16**, 83 (Mar.).
 — See also Aesthetics; Beams.
- Friction. See Pipes.
- Fuel. See Boilers; Internal-combustion Engines.
- Gas engines. See Internal-combustion Engines.
- Gas-producers.—"Producer-Gas Tests in the Queensland Railway Department," C. Renton, **16**, 85 (Mar.).
- Generators. See Laboratories; Power-Stations.
- Granaries. See Buildings.
- Headgears, Pit. See Winding Machinery.
- Heat-Transmission. See Pipes.
- HYDRAULICS.—"Laboratory Experiments on Bellmouth Spillways," A. M. Binnie and P. K. Wright, **15**, 197 (Jan.); *Correspondence*, **16**, 450 (Oct.).
 "Discharge by Surface Floats," W. M. Griffith, **15**, 284 (Feb.); *Correspondence*, **16**, 464 (Oct.).
 "Model Studies of Overflow Spillway Sections," O. S. Ofitzerooff, **15**, 75 (Nov.); "Cavitation in the Outlet Conduits of High Dams," H. A. Thomas and E. P. Schuleen, **15**, 227 (Jan.); "Regime Flow in Incoherent Alluvium," Gerald Lacey, **15**, 317 (Feb.); "Hydraulics of Sprinkling Systems for Irrigation," J. E. Christiansen, **16**, 216 (Apr.); "Description of a Water-Tunnel and Apparatus for the Investigation of Flow Problems," **16**, 405 (June).
- HYDRO-ELECTRIC PLANTS.—"New Works in Progress by the Government of Madras Electricity Department in 1940." Contributed by Lieut.-Col. M. G. Platts, **15**, 143 (Dec.).
 "The Uhl River Hydro-Electric Project," H. P. Thomas, **15**, 280 (Feb.); *Correspondence*, **16**, 461 (Oct.).
 "Water Power in Eire," **15**, 150 (Dec.); "Construction of the Hydro-Electric Development at La Tuque, Quebec," J. A. McCrory, **16**, 216 (Apr.).
 — See also Measurement; Turbines, Water.
- Instruments, Measuring. See Measurement.
- INTERNAL-COMBUSTION ENGINES.—"A Criterion for Knock in Petrol Engines," R. C. Plumb and A. C. G. Egerton, **15**, 80 (Nov.); "Fuel Injection in Oil Engines," G. W. A. Green, **15**, 231 (Jan.); "A 100-kilowatt A.R.P. Oil-Engine Installation," **16**, 217 (Apr.); "Diesel Engines Underground," **16**, 221 (Apr.).
 — See also Cranes; Dampers.
- Irrigation. See Hydraulics.
- James Alfred Ewing Medal, presentation of the, **16**, 286 (June).
- James Forrest Lecture, The. See Solids.
- Joists. See Beams.

Laboratories.—"New High-Voltage Laboratory at Liverpool University, **15**, 318 (Feb.).

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- Machine Tools.**—"The Rebuilding of Old Machine Tools for the Requirements of War," G. Schlesinger, **15**, 232 (Jan.); "The Machining of Abrasive Timber," P. Harris, **15**, 319 (Feb.).
- Masonry.**—"Structural Characteristics of Brick Masonry," H. R. Staley, **15**, 315 (Feb.).
- Masts.**—"Notes on Determining the Stresses in the Guys of Guy-supported Masts," Herbert Tooley, **15**, 220 (Jan.).
- MEASUREMENT.**—"A Study of the Allen Salt-Velocity Method of Water Measurement," M. A. Mason, **15**, 75 (Nov.); "Modern Measuring Instruments and the Principles of their Design," G. Schlesinger, **15**, 150 (Dec.); "A New Type of Power-Torque Meter," W. C. Hall, **15**, 151 (Dec.); "Measurement of Water-Flow at the Safe Harbor Hydro-Electric Power-Station, Pennsylvania," J. M. Mousson, **15**, 316 (Feb.); "Temporary Metering: Unusual Methods giving Exact Results," G. W. Stubbings, **15**, 320 (Feb.); "A New High-Speed Thermal Wattmeter," J. H. Miller, **16**, 219 (Apr.).
- See also Surveying.
- Medals and Premiums awarded, Session 1940-41**, **16**, 424 (Oct.).
- Members, election of**, **15**, 157 (Jan.); **16**, 137 (Apr.); 416 (Oct.).
- , Transfer to the Class of, **15** (inset in Nov.); 236 (Feb.); **16**, 1 (Mar.); 89, 137 (Apr.); 285 (June); 415 (Oct.).
- Minerals-Separation.**—"The Infrsizer and the Superpanner," W. R. Jones, **15**, 321 (Feb.).
- MINING. Fires and Ventilation.**—"The Atmospheric Electricity, an Overlooked Quantity in Mine Ventilation Air," L. Funder, **15**, 83 (Nov.); "The Determination of Dust-Concentrations in Mine Atmospheres," J. H. Griffiths and T. D. Jones, **15**, 83 (Nov.); "The Estimation of Firedamp," C. S. W. Grice and D. W. Woodhead, **15**, 154 (Dec.); "Dust Suppression," A. Nelson, **15**, 155 (Dec.); "Mine Ventilation with Conditioned Air," J. Spalding, **15**, 234 (Jan.); "Atmospheric Conditions in Deep Mines," H. L. M. Larcombe, **15**, 234 (Jan.); "Ventilation and Dust-Control at the Wright-Hargreaves Mine," G. R. Yourt, **16**, 221 (Apr.); "A Critical Review of Dust-Sampling Methods employed in Witwatersrand Gold Mines," J. de V. Lambrechts, **16**, 412 (June); "Permissible Dust Count proposed for Utah Mines," **16**, 413 (June); "Firedamp Ignition by Compressed-Air Discharges," I. C. F. Statham, **16**, 414 (June).
- Loading and Conveying.*—"Endless-Rope Haulage: Large Installations working to the Dip," E. H. Browne, **15**, 84 (Nov.); "Slow Bankers," T. G. Dash, **15**, 84 (Nov.).
- Methods of Working.*—"The Pressure exerted by the Roof upon the Coal-Seam near the Face in Workings advancing to the Strike," F. K. T. van Iterson, **15**, 153 (Dec.); "Roof Movements and their Control on Some Conveyor Faces," J. R. Dinsdale and J. M. Hughes, **15**, 153 (Dec.); "Experiments with Reinforced-Concrete Props," J. K. Coultas and H. Henshaw, **15**, 153 (Dec.); "A Rock Burst at a Mysore Mine," **15**, 233 (Jan.); "Roof Action in Pillar Recovery with Mechanized Mining," G. B. Southward, **15**, 233 (Jan.); "The Scaling Bar, a Cause of Accidents," W. B. Paton, **15**, 233 (Jan.); "Machine Mining in Wartime: Recent Developments in Mechanization," **15**, 320 (Feb.); "Faulting and Ground Movement at the Wright-Hargreaves Mine," H. Hopkins, **16**, 87 (Mar.); "The Development and Construction of Longwall Roadways," H. C. M. Gordon, **16**, 87 (Mar.); "Economy of Supports on Mine Roadways," T. Dodd, **16**, 220 (Apr.); "The Stability of Supports used Underground," J. W. Bowen, **16**, 411 (June); "The Strength of Undermined Strata," W. H. Evans, **16**, 412 (June).
- See also Air, Compressed; Blasting; Coal; Collieries; Concrete; Conveyors; Drills; Excavators; Explosives; Hoists; Internal Combustion Engines; Minerals-Separation; Motors; Ores; Ropes; Shaft-sinking; Signalling; Surveying; Tunnels; Winding Machinery.
- MOTORS, ELECTRIC.**—"Harmonic Theory of Noise in Induction Motors," W. J. Morrill, **15**, 80 (Nov.); "Flameproof Electric Motors in Industry," **15**, 80 (Nov.); "A Large All-Welded Electric Motor," **15**, 317 (Feb.).
- Moulding.**—"Shot Moulding of Insulation," R. I. Martin, **15**, 232 (Jan.).

OBITUARY.—Sir Thomas Hudson Beare, **15**, 70 (Nov.); Lord Cadman, **16**, 605 (Oct.); A. T. Coode, **16**, 80 (Mar.); Sir Harley Hugh Dalrymple-Hay, **15**, 314 (Feb.); C. G. DuCane, **16**, 208 (Apr.); E. O. Forster Brown, **16**, 605 (Oct.); W. Vaux Graham, **15**, 71 (Nov.); Sir Nigel Gresley, **16**, 404 (June); Sir Robert Hadfield, **15**, 145 (Dec.); Prof. B. P. Haigh, **16**, 209 (Apr.); W. H. Hamer, **15**, 71 (Nov.); Dr. H. S. Hele-Shaw, **16**, 210 (Apr.); C. L. Howard Humphreys, **16**, 606 (Oct.); Prof. C. F. Jenkin, **15**, 72 (Nov.); David Lyell, **16**, 80 (Mar.); C. H. Merz, **15**, 146 (Dec.); E. W. Monkhouse, **15**, 224 (Jan.); Sir Charles L. Morgan, **15**, 224 (Jan.); W. S. Nicholson, **15**, 72 (Nov.); Roger T. Smith, **15**, 73 (Nov.); C. P. Sparks, **16**, 211 (Apr.); E. Brough Taylor, **16**, 212 (Apr.); Sir Joseph J. Thomson, **15**, 74 (Nov.); C. H. Wingfield, **16**, 213 (Apr.).

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Original Communications, Additional, received between 1 September, 1940, and 31 August, 1941, 16, 603 (Oct.).

Piers, bridge. *See* Foundations.

—, **timber.** *See* Cranes.

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PIPES.—"A 48-inch Diameter Cast-Iron Water-main," **15**, 78 (Nov.); "Concrete Coating for Underground Piping," J. H. T. McGee, **15**, 229 (Jan.); "Sterilization of Repaired Water-Mains," Lt.-Col. E. F. W. Mackenzie, **15**, 316 (Feb.); "Supporting Strengths of Cast-Iron Pipe for Water and Gas Service," W. J. Schlick, **16**, 408 (June).

— *See also* Welding; Water-Supply.

POWER AND POWER-TRANSMISSION.—"Power-Factor Correction," **15**, 80 (Nov.); "A New 15-Kilowatt Pneumatic Circuit-Interrupter," L. R. Ludwig, H. L. Rawlins, and B. P. Baker, **15**, 151 (Dec.); "Magnetic 'De-Ion' Circuit-Breaker for 2,500–5,000 Volts," L. R. Ludwig and R. H. Nau, **15**, 151 (Dec.); "Mechanical Integrity in the Design of Electrical Circuit-Breakers," M. C. Hunter, **15**, 318 (Feb.); "Tripole Construction: Support for Heavily-Loaded Transmission-Lines," J. L. Gavel, **16**, 83 (Mar.); "War Damage to Electric Supply Mains," W. E. Bradshaw, **16**, 85 (Mar.).

— *See also* Belts; Collieries; Mining (*Methods of Working*); Surveying.

POWER-STATIONS.—"New Turbo-Generator for the Walnut Power-Station, Ohio," C. A. Butler, jun., **15**, 79 (Nov.); "The Mulajore Power-Station, Calcutta," **15**, 79 (Nov.); "A Pond Water-Spray System for fighting Sub-Station Fires," P. J. Zeibe, **16**, 86 (Mar.); "Power-Station Auxiliaries," T. H. Carr, **16**, 409 (June).

Pumps.—"The Axial Adjustment of Deep-Well Turbine Pumps," M. P. O'Brien and R. G. Folsom, **16**, 218 (Apr.).

RAILWAYS AND RAIL TRANSPORT. General.—"Colonial Railways, 1929–38: an Economic Review," J. W. Spiller, **16**, 425 (Oct.).

Locomotives (steam).—"Articulated Goods Locomotives for the Delaware and Hudson Railway," **15**, 81 (Nov.); "Locomotive Development and Design on the South African Railways," W. A. J. Day, **15**, 81 (Nov.); "The Making of Comparative Efficiency Tests with Locomotives on the Road," C. A. Cardew, **15**, 151 (Dec.); "New Locomotives for the New York Central Railway," **15**, 318 (Feb.); "Standing Locomotive Tests on the New York Central Railway," W. F. Collins, **16**, 218 (Apr.); "New General Utility Locomotives for the London and North Eastern Railway," **16**, 409 (June); "New Goods Locomotives for the Western Maryland Railway," **16**, 410 (June).

Locomotives (oil-engined).—"New 2,000-Horsepower Diesel-Electric Locomotives for the Chicago, Rock Island and Pacific Railway," **16**, 410 (June).

Locomotives (electric).—"A New Electric Locomotive for the London and North Eastern Railway," **16**, 410 (June).

Rolling Stock.—"Air-Cooled Rail-Cars for the New York, Susquehanna, and Western Railway," **15**, 81 (Nov.); "A Fundamental Development in Suspension and Construction for Railway Coaches," P. K. Beemer, F. C. Lindvall, E. F. Stoner, and W. E. Van Dorn, **15**, 231 (Jan.).

- Track*.—"Reducing Curve Resistance by Rail Lubrication," 15, 77 (Nov.); "A Method of Re-aligning and Transitioning Railway Curves," S. R. Chopra, 15, 149 (Dec.); "Creep of Rails," S. N. Dutt, 16, 408 (June).
 — See also Cranes; Drainage; Gas-producers; Signalling; Tunnels.
Relaxation methods. See *Hydraulics*.
Reservoirs.—"Repairs to a Reinforced-Concrete Reservoir," J. F. Haseldine, 16, 205 (Apr.).
Rivers.—"A Method of Estimating the Maximum Possible Silt Deposit upstream of Dams constructed in Silt-Carrying Rivers," Abdel Aziz Ahmed, 16, 399 (June).
 — See also *Floods*; *Hydraulics*.
ROADS.—"Highway Transition-Curves: a New Basis for Design," H. A. Warren (Paper published in Vol. 14, p. 373: June, 1940). *Late Correspondence*, 15, 61 (Nov.).
 "General Properties of Parabolic Vertical Curves, with Special Reference to Road Design," D. W. M. Smith, 15, 307 (Feb.).
 "Road Traffic Calculations," A. J. H. Clayton, 16, 247; *Discussion*, 264 (June); *Correspondence*, 16, 588 (Oct.).
 "Stresses between Tire and Road," A. H. D. Markwick and H. J. H. Starks, 16, 309 (June).
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SHAFTS.—"Shaft-Sinking in Quicksand," E. S. Tillinghast, 15, 83 (Nov.).
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Soil Mechanics.—"The Application of Soil Mechanics in Building the New York World's Fair," G. L. Freeman, G. W. Glick, and H. Gray, jun., 15, 147 (Dec.).
 — See also *Clay*; *Earth-Pressure*.
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SURVEYING.—"Advantages of the Tacheometer for Overhead Transmission Line Surveys," John McCombe, 15, 226 (Jan.); "A Graphical Method of adjusting Underground Traverses in Mine Surveys," W. H. Wilson, 15, 233 (Jan.); "A One-Man Curve Ranger," A. M. A. Struben, 16, 82 (Mar.); "The Deviation and Survey of a Horizontal Borehole," G. A. Corden, 16, 411 (June).
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- TUNNELS.—“New Water-Supply Pressure-Tunnel at Baltimore, Maryland,” Leon Small, **15**, 78 (Nov.).
 — *See also* Corrosion.
- TURBINES, *Steam*.—“Investigation of Steam-Turbine Nozzle and Blading Efficiency,” F. Dollin, **16**, 217 (Apr.).
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 — *See also* Power-Stations.
- Valves, steam.—“Some Aspects of the Design of Large High-Pressure Steel Valves,” F. D. Cotterman and R. E. Falls, **15**, 79 (Nov.).
 —, water. *See* Water-Supply.
- Ventilation. *See* Mining.
- Warehouses. *See* Buildings.
- Water-power. *See* Hydro-Electric Plants.
- WATER-SUPPLY.—“The Strengthening and Final Testing of the Pressure Tunnel for the Water-Supply of Sydney, N.S.W.,” S. T. Farnsworth. Author's reply to Correspondence, **16**, 600 (Oct.). For Paper and Correspondence, *see* **11**, 561 (Apr.), and **12**, 501 (Oct.).
 “Novel Design Features of the Lansing Water-Conditioning Plant,” C. R. Erickson, **15**, 78 (Nov.); “Water-Sterilization—the Choice of Method,” Lt.-Col. S. F. W. Mackenzie, **15**, 229 (Jan.); “Automatic Float-Valves for Rangoon Water-Supply,” **15**, 230 (Jan.); “Pollution of Drinking Water through Cross-Connexion with Fire Lines,” J. C. Geiger, **16**, 85 (Mar.); “Treatment of the Delaware Water-Supply to New York City,” **16**, 85 (Mar.); “Waterval Boven Water-Supply, Transvaal,” A. F. Bruyns Haylett, **16**, 407 (June).
 — *See also* Corrosion; Measurement; Pipes; Tunnels.
- Water Towers.—“Design for a Water Tower,” W. E. Blackmore, **15**, 141 (Dec.).
- Water-tunnels. *See* Hydraulics.
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- WELDING.—“The Butt Welding of Steel Tubes and Pipes,” H. Harris, J. E. Jones, and A. L. Skinner, **15**, 152 (Dec.); “The Weldability of High-Tensile Structural Steels,” **15**, 320 (Feb.); “The Arc Welding of High-Tensile Alloy Steels,” E. C. Rollason; E. C. Rollason and A. H. Cottrell; A. H. Cottrell, K. Winterton, and P. D. Crowther, **16**, 219 (Apr.).
 — *See also* Motors.
- Wells. *See* Corrosion.
- Winding Machinery.—“Mobile Winding Gear for Collieries,” **15**, 234 (Jan.).

TUNNELS.—“New Water-Supply Pressure-Tunnel at Baltimore, Maryland,” Leon Small, **15**, 78 (Nov.).

— *See also* Corrosion.

TURBINES, *Steam*.—“Investigation of Steam-Turbine Nozzle and Blading Efficiency,” F. Dollin, **16**, 217 (Apr.).

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— *See also* Power-Stations.

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—, *water*. *See* Water-Supply.

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— *See also* Corrosion; Measurement; Pipes; Tunnels.

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Water-tunnels. *See* Hydraulics.

Wattmeters. *See* Measurement.

Weirs. *See* Hydraulics.

WELDING.—“The Butt Welding of Steel Tubes and Pipes,” H. Harris, J. E. Jones, and A. L. Skinner, **15**, 152 (Dec.); “The Weldability of High-Tensile Structural Steels,” **15**, 320 (Feb.); “The Arc Welding of High-Tensile Alloy Steels,” E. C. Rollason; E. C. Rollason and A. H. Cottrell; A. H. Cottrell, K. Winterton, and P. D. Crowther, **16**, 219 (Apr.).

— *See also* Motors.

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